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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/537,615	12/05/2005	Francis Xavier Kay	063030-00080	6864

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PITTSBURGH, PA 15219

EXAMINER
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TIETZEN, MARINA ANNETTE

ART UNIT	PAPER NUMBER
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3753

MAIL DATE	DELIVERY MODE
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02/06/2009

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/537,615

**Applicant(s)**

KAY, FRANCIS XAVIER

**Examiner**

MARINA TIETJEN

**Art Unit**

3753

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 09 October 2008.  
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1, 4-15 and 18-34 is/are pending in the application.  
4a) Of the above claim(s) 7-15 and 19-30 is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 1, 5, 18, 32 and 34 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.  
10) ☒ The drawing(s) filed on 30 June 2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:  
1. ☒ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 07/08/2008  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_  
5) ☐ Notice of Informal Patent Application  
6) ☐ Other: \_\_\_\_\_

### **DETAILED ACTION**

1. Claims 2, 3, 16, and 17 have been cancelled. Claims 1, 4-15, and 18-34 remain pending. Claims 7-15 and 19-30 are withdrawn as being drawn to a non-elected invention, the election made without traverse in the response of October 9, 2008.

### ***Drawings***

2. Figures 1-4 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:  

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
4. Claims 4, 6, 31, and 33 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite in that it fails to point out what is included or excluded by the claim language. It is unclear to the examiner whether the limitation given in the parentheses in lines 21-22, "(i.e. the end remote from said valve seat)" of claim 4, is part of the claim or not. Presently, the limitation included in the parentheses will not be considered as a

limitation for this particular claim. Claims 6, 31, and 33 are included due to their dependency.

***Claim Rejections - 35 USC § 103***

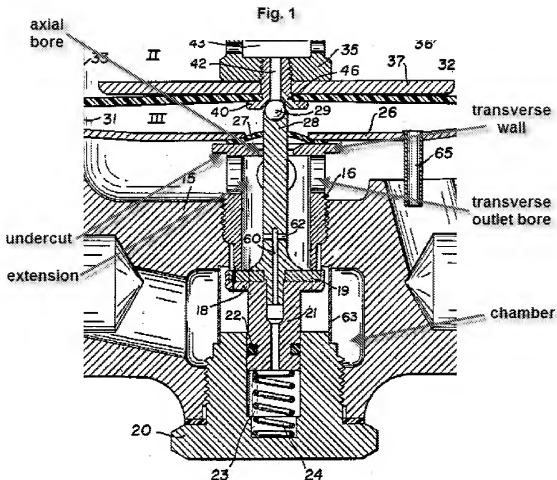
5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Faust (U.S. Pat. No. 2,806,481) in view of Berfield (U.S. Pat. No. 4,799,285).

Faust discloses a valve (fig. 1) including a valve housing (10, 16) providing a chamber (see labeled fig. 1 below) accommodating at least part of a valve member (21, 28), said chamber forming at least part of a first or high pressure side of said valve, a valve port (sealed at 19) leading from said chamber to a second or low-pressure side of said valve, a valve seat (contacts 19) around the valve port, said valve member (21, 28) having a seating surface (19) co-operating with the valve seat (lower side of 28, contacting 19) and the valve member (21, 28) being displaceable, along an axis passing through said port, respectively (a) in a first direction, to move said seating surface into said chamber and away from said valve seat (contacts 19) and (b) in a second, opposite direction, to move said seating surface towards said valve seat (contacts 19), biasing means (24) being provided biasing said valve member (21, 28) in said second direction towards its closed position, the valve housing (10, 16) having an extension (see labeled

fig. 1 below) extending in said second direction beyond said port and forming a transverse wall (see labeled fig. 1 below) at an axial end of said extension at a distance from said port, said extension having an axial bore (see labeled fig. 1 below) extending from said port and forming a central aperture in said transverse wall, which aperture forms a bearing for an axial extension of said valve member (21, 28) through which bearing said axial extension passes as a sliding fit, whereby the valve member is guided for said axial movement, said axial bore being bored out to a seat diameter of the valve port up to a distance just short of said transverse wall to provide a passage for gas from said port and at least one transverse outlet bore (see labeled fig. 1 below) radiating from said axial bore to a respective opening in a side wall of said extension, on the periphery of the valve housing (portion 16), so that gas outflow from said port is translated from the axial sense to the radial sense, the transverse wall serving to deflect any gas proceeding from said valve port in a direction parallel with said valve axis, wherein the periphery of said extension of the valve housing (portion 16) is undercut (see labeled fig. 1 below) in the region behind the transverse wall.



However Faust does not disclose said undercut region becomes gradually increasingly spaced from said axis with distance, measured parallel with said axis, away from said transverse wall, so that over said undercut region, the peripheral surface of the valve body is inclined with respect to said axis, and wherein one or each said opening or openings at the side of the valve body opens onto said inclined peripheral surface.

Berfield teaches an outlet port baffle with an undercut region which becomes gradually increasingly spaced from the axis with distance, measured parallel with said

axis, away from a transverse wall, so that over said undercut region, the peripheral surface of the valve body is inclined with respect to said axis, and wherein one or each said opening or openings at the side of the valve body opens onto said inclined peripheral surface for the purpose of providing an aesthetically pleasing outlet port baffle that redirects air (col. 1, lines 51-54, 61-62).

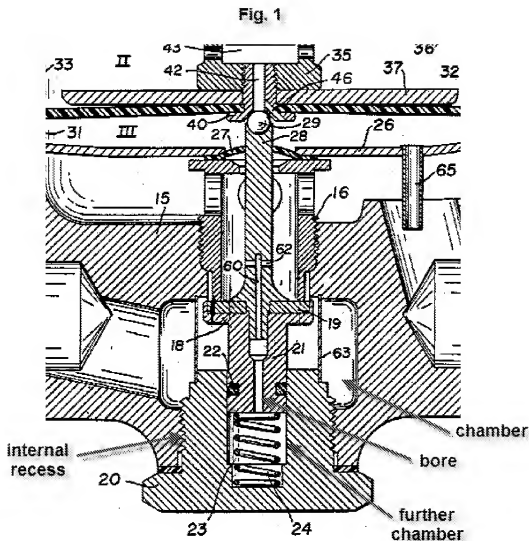
It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Faust's invention such that said undercut region becomes gradually increasingly spaced from said axis with distance, measured parallel with said axis, away from said transverse wall, so that over said undercut region, the peripheral surface of the valve body is inclined with respect to said axis, and wherein one or each said opening or openings at the side of the valve body opens onto said inclined peripheral surface, as taught by Berfield, for the purpose of providing an aesthetically pleasing outlet port baffle that redirects air.

7. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Faust (U.S. Pat. No. 2,806,481) in view of Newton (U.S. Pub. No. 2003/0085372).

Faust discloses a valve (fig. 1) including a valve housing (10, 16) providing a chamber (see labeled fig. 1 below) accommodating at least part of a valve member (28), said chamber forming at least part of a first or high pressure side of said valve, a valve port (sealed at 19) leading from said chamber to a second or low-pressure side of said valve, a valve seat (contacts 19) around the valve port, said valve member (28) having a seating surface (19) co-operating with the valve seat (lower side of 28, contacting 19)

and the valve member (28) being displaceable, along an axis passing through said port, respectively (a) in a first direction, to move said seating surface into said chamber and away from said valve seat and (b) in a second, opposite direction, to move said seating surface towards said valve seat (contacts 19), the valve member (28) having a bore (see labeled fig. 1 below) extending axially from the high pressure end thereof and forming a cylinder sealingly slidable, in said first and second directions, on a piston (21) fixed (note that "fixed" is a relative term) within said valve housing (10, 16), to define therewith a further chamber (see labeled fig. 1 below), biasing means (24) being provided biasing said valve member (28) in said second direction towards its closed position, said further chamber in either case communicating with the low pressure side of the valve, and wherein said piston (21) has a base part (20) or supporting insert providing an outer periphery received in an internal recess (see labeled fig. 1 below) provided around a bore which extends axially into the valve housing (10, 16) from a high pressure end thereof and which bore at least partially defines said chamber accommodating the valve member (28), said internal recess or groove being disposed at a location remote from said valve seat (contacts 19).





However, Faust does not disclose the base part or supporting insert is designed for resilient inward flexing to allow it to be inserted in the bore in the valve housing from said high pressure end thereof to spring into said groove when the base part or insert is at the longitudinal position of said internal groove or recess, thereby to retain said piston in place.

Newton teaches a base part (20, fig. 2) designed for resilient inward flexing to allow it to be inserted in a bore in a valve housing (18) which springs into a groove (58,

fig. 6) when the base part (20) is at the longitudinal position of said internal groove (58), for the purpose of retaining a valve member (24) in place, and as an alternative equivalent to using threads for attaching the base part to the housing in a manner known in the art which yields predictable results.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Faust's invention such that the base part (20) is designed for resilient inward flexing to allow it to be inserted in the bore in the valve housing from said high pressure end thereof to spring into said groove when the base part or insert is at the longitudinal position of said internal groove, as taught by Newton, for the purpose of retaining a valve member (24) in place, and as an alternative equivalent to using threads for attaching the base part to the housing in a manner known in the art which yields predictable results.

8. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Faust (U.S. Pat. No. 2,806,481) in view of Newton (U.S. Pub. No. 2003/0085372) further in view of Wiltse (U.S. Pat. No. 3,058,717).

Faust discloses the invention as essentially claimed, except for the lower edge of the bore in the valve housing is internally chamfered and/or wherein the outer edge of said base part is externally chamfered, to facilitate insertion of the base part or insert into the bore in the valve housing from said lower end of the valve housing.

Wiltse teaches it is known in the art to chamfer (68, fig. 8) a bore (22) end for the purpose of facilitating insertion of another member (66, fig. 5) into the bore (22).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Faust's invention such that the bore in the valve housing is internally chamfered and/or wherein the outer edge of said base part is externally chamfered for the purpose of facilitating insertion of the base part or insert into the bore in the valve housing from said lower end of the valve housing in a manner well known in the art.

9. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kay (GB 2298026) in view of Newton (U.S. Pub. No. 2003/0085372).

Kay discloses a valve (fig. 1) including a valve housing (2) providing a chamber (12) accommodating at least part of a valve member (3), said chamber (12) forming at least part of a first or high pressure side of said valve, a valve port (10) leading from said chamber (12) to a second or low-pressure side of said valve, a valve seat (contacts 20) around the valve port (10), said valve member (3) having a seating surface (20) co-operating with the valve seat and the valve member (3) being displaceable, along an axis passing through said port (10), respectively (a) in a first direction, to move said seating surface (20) into said chamber (12) and away from said valve seat and (b) in a second, opposite direction, to move said seating surface (20) towards said valve seat, the valve member (3) having a bore (3) extending axially from the high pressure end thereof and forming a cylinder sealingly slidable, in said first and second directions, on a piston (30) fixed within said valve housing (2), to define therewith a further chamber (22), biasing means (46) being provided biasing said valve member (3) in said second

direction towards its closed position, said further chamber (22) in either case communicating with the low pressure side of the valve, and wherein said piston (30) has a base part (38) or supporting insert providing an outer periphery received in an internal recess (lower end of 12) provided around a bore (bore of chamber 12) which extends axially into the valve housing (2) from a high pressure end thereof and which bore at least partially defines said chamber (12) accommodating the valve member (3), said internal recess or groove being disposed at a location remote from said valve seat (surface of housing that contacts 20).

However, Kay does not disclose the base part or supporting insert is designed for resilient inward flexing to allow it to be inserted in the bore in the valve housing from said high pressure end thereof to spring into said groove when the base part or insert is at the longitudinal position of said internal groove or recess, thereby to retain said piston in place.

Newton teaches a base part (20, fig. 2) designed for resilient inward flexing to allow it to be inserted in a bore in a valve housing (18) which springs into a groove (58, fig. 6) when the base part (20) is at the longitudinal position of said internal groove (58), forth the purpose of retaining a valve member (24) in place, and as an alternative equivalent to using threads for attaching the base part to the housing in a manner known in the art which yields predictable results.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Kay's invention such that the base part (20) is designed for resilient inward flexing to allow it to be inserted in the bore in the valve housing from

said high pressure end thereof to spring into said groove when the base part or insert is at the longitudinal position of said internal groove, as taught by Newton, for the purpose of retaining a valve member (24) in place, and as an alternative equivalent to using threads for attaching the base part to the housing in a manner known in the art which yields predictable results.

10. Claim 32 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kay (GB 2298026) in view of Newton (U.S. Pub. No. 2003/0085372) further in view of Appleton et al. (U.S. Pat. No. 3,167,323).

Kay discloses the invention as essentially claimed, including a sealing arrangement comprising said valve member (3) having said bore (22), a seal (42) for sealing said bore (22) with respect to said piston (30) disposed centrally within the bore (22) and providing a larger diameter portion (32) engaging, or closer to, the wall of said bore (22) and a smaller diameter portion (34) on a higher pressure side of said larger diameter portion (32), said seal (42) comprising a resilient material, the seal (42) providing a base part (surface contacting piston portion 32) abutting a shoulder extending from the periphery of said larger diameter part (32) to the periphery of said smaller diameter part (34), the seal (42) including an inner sleeve (contacts 34), defining an inner limb and extending around said smaller diameter part (34), and extending away from said base to a free edge (opposite end from base), the seal (42) further including an outer sleeve (contacts bore 22) extending from said base part along said bore (22) to

a free edge (opposite end from base) of the outer sleeve, said outer sleeve defining another limb.

However, Kay's seal is not disclosed as generally U-shaped, and does not specify said outer sleeve, in an unstressed state of said seal, diverges slightly from the axis of the seal, with increasing distance from said base, and wherein the inner sleeve, in an un-stressed state of the seal, converges slightly towards said central axis of the seal with increasing distance from said annular base.

Appleton et al. teach U-shaped seals are commonly used on pistons, and further teach an improved U-shaped seal (fig. 1) wherein the outer sleeve (1), in an unstressed state of said seal, diverges slightly from the axis of the seal, with increasing distance from said base (3) and wherein the inner sleeve (2), in an un-stressed state of the seal, converges slightly towards said central axis of the seal with increasing distance from said annular base (3), for the purpose of providing a much more reliable sealing effect without a corresponding increase in friction and wear (col. 1, lines 51-53; col. 3, lines 23-31).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Kay's sealing arrangement such that the seal is generally U-shaped, and wherein said outer sleeve, in an unstressed state of said seal, diverges slightly from the axis of the seal, with increasing distance from said base and wherein the inner sleeve, in an un-stressed state of the seal, converges slightly towards said central axis of the seal with increasing distance from said annular base, as taught by

Appleton et al., for the purpose providing a much more reliable sealing effect without a corresponding increase in friction and wear.

***Allowable Subject Matter***

11. Claims 4, 6, 31, and 33 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action.

***Conclusion***

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. U.S. Pat. Nos. 3,075,545 (Eichelman), 4,793,379 (Eidsmore), 1,603,112 (Jenkins), 1,679,826 (Jenkins), and 2,343,146 (Jenkins) disclose valve modules which redirect air transversely through a housing extension. U.S. Pat. No. 4,417,503 (Izumi) discloses a common U-shaped piston seal. U.S. Pub. 2005/0236596 (Nowling et al.) discloses a base insert which flexes into the housing and wherein the housing and the insert have chamfered surfaces to facilitate insertion.

1. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MARINA TIETJEN whose telephone number is (571) 270-5422. The examiner can normally be reached on Mon-Thurs, 9:00AM-5:00PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, GREG HUSON can be reached on (571) 272-4887. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/John Rivell/  
Primary Examiner, Art Unit 3753

/M. T./  
Examiner, Art Unit 3753